

NAI2005

April 10 – 14, 2005 Millenium Hotel, Boulder, Colorado

Overall Theme – “Linkages in Astrobiology”

Conference Themes (I – VII)

I. Formation and evolution of planetary systems (How do habitats originate?)

- a. from clouds to protoplanetary disks to habitable planets and moons
- b. exploring the chemical and physical processes in star-forming regions, disks, planets and moons

II. Origin of life (How do biological systems originate?)

- a. simulating prebiotic chemistry and metaphors for prebiotic environments
- b. how unique is our biochemistry? RNA, DNA, or?
- c. exploring organic chemistry in our solar system (Mars, Europa, Titan)
- d. Earth's earliest biosphere, when and how?

III. Extra-solar planets (How common are habitable environments in the universe?)

- a. search results, new methods of detection (e.g. transits, lensing, etc.)
- b. new missions and methods for characterization (direct imaging/spectroscopy, wavelength(s) of choice)
- c. proposals on how to detect life on extrasolar planets
- d. what makes a planet habitable? what constitutes a habitable planet?

IV. Evolution in the solar system (Did (does) life exist elsewhere in the solar system?)

- a. Mars: latest results and prospects for life past and present
- b. icy bodies as habitats (Jovian moons, new results from Cassini/Huygens)
- c. probing the meteoritic and cometary records for clues on planet formation, solar system evolution, planetary habitats, origin of life, sources of prebiotic ingredients

V. Evolution of life (How does life interact with its environment?)

- a. studying diversity of life: 'extremophiles', the deep biosphere
- b. what are the long-term interactions between life and the environment; coupling the biosphere-atmosphere-lithosphere-hydrosphere?

VI. Tracing life (How does life leave a record of itself?)

- a. biosignatures: Molecular, isotopic, morphological
- b. novel approaches to searching for traces of life
- c. preservation issues and modification of biosignatures

VII. Informational, societal and philosophical issues (What is life and its future on Earth and elsewhere?)

- a. genetic materials as efficient coding schemes that program life and provide a fossil record of the evolution of the biosphere
- b. data-base management: How do we keep track of all that we know in our diverse disciplines? How do we improve communication between disciplines and transmit to the public?
- c. what are implications of the information explosion for the future evolution of life (e.g. how might natural selection be affected?)
- d. how do humans alter and interact with the environment and what is the future of life?
- e. how does information technology impact the future of civilization?
- f. philosophical implications: What will (or should?) we do (a) with our growing body of knowledge? (b) if we found clear evidence for extraterrestrial life (microbial vs. technological)?

Important Dates

July, 2004: Meeting announcement.

November 1, 2004: Online abstract submission (for NAI members, Focus Group participants, and International Partners) available.

December 1, 2004: Online registration available.

January 13, 2005: Abstract deadline.

April 10 – 14, 2005: NAI2005 meeting.

Goals of the meeting

- sharing of scientific results and directions across disciplines
- strengthening scientific collaborations across the Institute
- implementing new technologies in scientific inquiry
- advancing efforts in science education and public outreach
- highlighting astrobiology contributions to NASA space missions
- enhancing development of a generation of “native” astrobiologists

Participation

NAI2005 will involve participation of our Members and Partners through the submission of abstracts, Focus Group discussions and NASA mission input. Key

areas of strength in the Institute will be featured, such as highlighting the outcomes of the Fall 2003 Astrobiology Retreat and the Astrobiology Roadmap. Registration will be open to all those who have an affiliation with the NAI with the proviso that abstracts are entered under a specific Lead Team's, Focus Group's or International Partner's endorsement. Each author will be asked to indicate their team affiliation (Lead, FG, International, NASA HQ or Invited Speaker) by clicking a box in the registration window.

Attendance & Structure

Submitted abstracts will identify themselves in the abstract submittal page as fitting a particular theme (I – VII), along with connective key words (due to be up and running for testing by September 20, 2004) and whether they are participating in the Student Poster Competition.

Overview posters are required for each NAI node, International Partner and Focus Group – a separate area of the poster session along the south wall of the poster hall will be reserved for these at all times during the meeting.

The meeting abstracts, list of participants, etc. are to be published in a special issue of the journal *Astrobiology*, available at the meeting. A wallet-sized meeting card will be created that has the full schedule printed on it as well as maps to the Millennium and Marriot meeting rooms.

In a break from past practice, there will be no parallel sessions at NAI2005. All sessions will begin with an Invited Lead Speaker (25 min. + 5) who outlines the linkages between the embedded sub-themes and motivates participation of meeting attendees to the poster sessions. Lead talks are followed by oral presentations chosen from the submitted abstract that address specific topics within the Theme (12 min. + 3).

Presentation Details

Posters – Because there will be relatively few oral presentations, the primary medium for presentation will be in the form of a poster; most abstracts will be chosen for a poster presentation. Poster dimensions = 1.2m x 1.2m on vertical stands with foam-core (not “A-frame”). Posters will be arranged as follows and changed on a daily basis: 60/day in the Millennium Room and 60/day in the Century Room (which will also contain the refreshment stand & bar open during the dedicated poster time). Posters will be grouped according to Theme. The poster rooms are connected to each other by two double-doors, as well as having patio access. There will be space for 120 posters/day, for a total of 480. These are in addition to the permanent posters from the 16 Institute nodes, 5 International Partners and 9 focus groups. If there is a need for more poster space than this, additional space will be found (hallways, spillover rooms, but all

close to the larger poster rooms). The poster rooms will have several whiteboards, tables and chairs to facilitate discussion as well as WiFi.

Talks – Come in two varieties (i) **7** Invited Lead Speakers (25 + 5 min) and (ii) **50** Contributed Talks (12 + 3 min). All talks will be given in the Millennium Grand Ballroom (seating for 500, with A/V). Oral presenters will be strongly encouraged to use electronic media (Powerpoint, etc.). **Lead Speakers** will be invited; they are responsible for linking themes in the session and drawing attention to the posters. **Contributed talks** will be chosen from the submitted abstracts. WiFi access will not be available in the space reserved for oral presentations, but is restricted to the poster session venue.

Time – The schedule will be strictly adhered to; session chairs' duties are to keep time using flash-cards and to mediate questions. Chairs will be composed of the Lead Speaker and a member of the POC covering that discipline. Time for additional discussion has been structured within the meeting schedule, including 30 minutes of "open mic".

Student Poster Competition → Each participant in the competition will have their poster identified with a colored sash with the letter "S". Poster judges use a form to rate the posters during each session with a final meeting on Wednesday night to choose the winner. The winner will be announced on Thursday morning.

Other Meeting Details

Cyber Café – Open daily during the meeting. Internet access and light refreshments will be available during working hours (Hours to be determined, 10am - ?). WiFi as well as high-speed internet will be available as part of your registration.

Breakout sessions – At all times, we will have reserve rooms available for spontaneous breakout discussion sessions (a.k.a. 'Mad Meetings'). Each room will have a dry erase whiteboard, table and chairs. Regularly scheduled breakout sessions (Focus Group meetings, Executive Board meetings, etc.) will not be permitted to conflict with the Poster session.

Focus Group meetings – These will be divided into 3 opportunities on Monday, Tuesday and Wednesday evening(s). There are many FGs, and some with membership that spans different FGs. FG meetings can be pre-planned by FG leaders and may also be scheduled on an *ad hoc* basis (based on room availability and scheduling). FG meetings will not be allowed to conflict with the Poster session.

Preliminary Program

Sunday April 10, 2005 – field trips and science primer sessions

Fieldtrips will incur a separate charge to the attendees, which will appear on the registration billing. Anticipated fees per conference participant are ~ \$25 which would also include a box lunch. Fieldtrips FA-FC are available to registered conference delegates only. Accompanying persons may attend fieldtrip FD.

Fieldtrips – open to all participants on a first-come, first-served basis. FA-FC leave at 9am and return at 4pm to the Millennium hotel.

FA: The geology of the Front Range, Colorado (30 – 40 persons)
Organized by Dr. Alan Lester

FB: Dinosaur track ways and the K/T boundary of the Denver Basin (max. 30)
Organized by Prof. Jaelyn Eberle

FC: Rocky Mountain National Park and Estes Park, Colorado (30 – 40 persons)
Organized by TBD

FD: Walking tour of Downtown Boulder (2 groups of 20 persons, 2.5 hours?)
Organized by TBD

*Up to 130 people can be accommodated on the various fieldtrips.

Science Primer sessions – **to be arranged** (attendance could be large). These are envisioned to be general-themed workshops that present cross-over themes in Geology, Chemistry, Astronomy and Biology. Primer sessions are free, but participants will be responsible for their own lunch.

*Welcome/Icebreaker: ALL 5:30pm – 9:00pm Millennium Hotel – Pavillion or LASP STB to be determined. – **to be arranged***

6:00 – on space made available for evening Focus Group Meetings

Preliminary Program

Monday April 11, 2005

I. Formation and evolution of planetary systems

7:00 – 8:30 AM breakfast (set up posters I & II night before, at this time, or spill over at coffee break)

8:30 – 9:00 AM Conference Welcome

9:00 – 9:25 AM **Lead talk 1 – How do habitats originate? Connecting astronomy, meteoritics and prebiotic chemistry**

9:30 – 10:30 short talks from contributed abstracts

10:30 – 11:00 Coffee break and open mic for discussion

11:00 – 12:00 short talks from contributed abstracts

12:00 – 1:30 PM lunch break (poster rooms are open, breakout sessions)

II. Origin of life

1:30 – 1:55 PM **Lead talk 2 – How do biological systems originate? Connecting prebiotic chemistry, astrochemistry and planetary science**

2:00 – 3:15 short talks from contributed abstracts

3:15 – 3:30 integrating these themes into science E/PO

3:30 – 6:00 Time exclusively scheduled for Theme I & II posters

Also at this time: Spontaneous breakout sessions, simultaneous Educational and Technology demonstrations in E/PO room, Cyber Café open across from Posters

6:00 – 7:30 PM **Public symposium on the Main Boulder campus. (Proposed venue Macky auditorium or CHEM 140)**

Preliminary Program

Tuesday April 12, 2005

III. Extra-solar planets

7:00 – 9:00 AM breakfast (set up posters night before, at this time, or coffee break)

9:00 – 9:25 AM **Lead talk 3 – How common are habitable planets in the Universe? Connecting biochemistry, astrophysics and geophysics**

4 contributed talks @ 15 minutes each

10:30 – 11:00 Coffee break and open mic for discussion

4 contributed talks @ 15 minutes each

12:00 – 1:30 PM lunch break (poster rooms are open)

IV. Evolution in the solar system

1:30 – 1:55 PM **Lead talk 4 – Did (does) life exist elsewhere in the solar system? Connecting evolutionary biology, environmental biology and biogeochemistry**

5 contributed talks @ 15 minutes each

3:15 – 3:30 integration of these themes into science E/PO

3:30 – 6:00 Time specifically scheduled for Theme III-IV posters

Also at this time: Spontaneous breakout sessions, simultaneous Educational and Technology demonstrations in E/PO room, Cyber Café open

7:00 PM Conference banquet – Millenium hotel Grand Ballroom– **TBA**

Preliminary Program

Wednesday April 13, 2005

V. Evolution of life

7:00 – 9:00 AM breakfast (set up posters night before, at this time, or coffee break)

9:00 – 9:25 AM **Lead talk 5 – How does life interact with its environment? Connecting paleontology, molecular biology and geobiology**

4 contributed talks @ 15 minutes each

10:30 – 11:00 Coffee break and open mic for discussion

4 contributed talks @ 15 minutes each

12:00 – 1:30 PM lunch break (poster rooms are open)

VI. Tracing life

1:30 – 1:55 PM **Lead talk 6 – Biosignatures. Connecting microbial ecology, biochemistry and geochemistry**

5 contributed talks @ 15 minutes each

3:15 – 3:30 integration of these themes into science E/PO

3:30 – 6:00 Time specifically scheduled for Theme V-VI posters

Also at this time: Theme V – VI spontaneous breakout sessions, Cyber Café open

6:00 PM **Postdoctoral and graduate student mixer at Marriot**

6:00 PM Spontaneous breakout sessions, simultaneous Educational and Technology demonstrations in E/PO room, Cyber Café open

Preliminary Program

Thursday April 14, 2005

VII. Societal and philosophical issues: What is life?

7:00 – 9:00 AM breakfast (set up posters night before, at this time, or coffee break)

9:00 – 9:25 AM **Lead talk 7 – Information, technology and the future of life. Connecting philosophy, astrobiology and pedagogy.**

4 contributed talks @ 15 minutes each

10:30 – 11:00 Coffee break and open mic for discussion

4 contributed talks @ 15 minutes each

12:00 Conference adjourns –**winners announced for Student Poster Competition**

12:30 – 2 PM business meetings